

---

## Program Letter

Bureau of Storage Tank Regulation  
Revised March 1998

# Pipe, Pipe Trench and Sump Dispensers

This program letter is intended to clarify and update Department policy regarding underground piping. Although ILHR 10 adopts PEI/RP100-90, (the 1990 Edition) we reference the more current PEI standards to recognize the application principles of new and current technology. Current technology and installation trends experience the use of flexible tubing or pipe, which is not addressed in PEI/RP 100-90. In some situations manufacturers and installers of flexible pipe systems have deviated from what the Department considers accepted good practices.

The following are three common typical flexible pipe configurations, which this program letter is addressing:

- Flexible double wall piping in a continuous run configuration.
- Double wall pipe with secondary containment sumps under dispensers and submersible transfer pumps.
- Pressurized Submersible Turbine Pump (STP) Systems with electronic line leak monitors.

The PEI RP 100-97 standard (the current 1997 Edition) continues to maintain the traditional burial depth and trench slope dimensions. Section 9.7 of the current edition specifically addresses flexible piping systems and continues to require the 1/8 inch per foot slope for flexible piping. The standard however, does not require that the *flexible piping* slope always drain toward the tank. It allows configurations of flexible piping to drain into dispenser sumps for secondarily contained or double walled systems only.

*PEI/RP 100-97-9.7-7: Slope trenches 1/8 inch per foot so that leaked product will drain into sumps. When dispenser sumps are configured in series, the high point in the piping may be located between sumps. Depending upon the distance between dispenser sumps and the tank sumps, the use of an intermediate sump may be needed to maintain 1/8 inch per foot slope between connecting sumps.*

The following facts and observations associated with double walled piping were used in the development and support of this Department policy.

- A consistent piping slope permits any vapors trapped within the system, which can adversely affect the operation of the leak detection system, to be purged from the high end of the piping. Thermal contraction of trapped vapor can simulate a leak, causing a higher probability of false alarm
- Sloping of the pipe enhances testing and leak detection, improves performance of check valves, and facilitates the draining of the pipe system for maintenance, repair, removal or abandonment. The historical perspective of the slope requirement will also help prevent unnecessary problems during the previously mentioned operations or activities.
- If piping is installed level (primarily with flexible piping), the earth/backfill may settle unevenly causing traps, which can adversely affect the operation of the system (venting, leak detection, etc.). If utilizing interstitial monitoring, traps in the secondary piping could result in a delay in detecting the leak.

In an effort to address our concerns, as well as recognize the PEI/RP 100 standard the Department will maintain the following requirements:

- The pipe run between the tank and the first dispenser must be sloped to drain a minimum 1/8 inch per foot back to the tank sump. The tank sump must also include an *electronic* sensor.
- All dispenser sumps must include *electronic* sensors if the pipe configuration allows for pipe drainage to the succeeding sumps.
- All dispenser sumps must include *electronic* sensors even if the pipe configuration allows for pipe drainage to the submersible sump via a connecting flow tube.
- The Department's policy on single wall systems remains unchanged with regard to burial depth, pipe slope and leak detection requirements.

The following are scenarios and schematics used to describe situations addressed in this program letter but are not limited to the various possibilities that exist:

#1: Service station has supply piping running from a UST to three dispensers in a series. Dispenser location is such that a 1/8" slope can not be maintained from the tank to the last dispenser in the series, due to elevation changes, terrain features, dispenser layout, etc. The dispensers or dispenser sumps are at *varying* elevations.

#2. Service station has supply piping running from a UST to three dispensers in a series. Dispenser location is such that a 1/8" slope can not be maintained from the tank to the last dispenser in the series, due to elevation changes, terrain features, dispenser layout, etc. The dispensers or dispenser sumps are *positioned level* along entire piping run.

#### **Plan review submittal**

Unless specific information is provided, the reviewer will address the plan as a flat site with system design maintaining a constant slope from the furthest dispenser to the tank. To convey the topography, dispenser and pipe logistics to the reviewer, the Scope of Work should include a description of the unique characteristics of the facility for which the alternative pipe configuration is warranted.

#### **Rigid underground product pipe slope requirements.**

When utilizing *rigid non-metallic double walled* product pipe *with* stp and dispenser sumps, the electronic sensor requirement applies *if claiming interstitial monitoring*. The pipe slope requirements shall be maintained from the first *series* dispenser back to the tank.

When utilizing *rigid non-metallic double walled* product pipe *with* stp and dispenser sumps, claiming *automatic electronic line leak detection capable of detecting a .2 gph leak rate*, sump sensors will *not* be necessary. The slope requirements shall be maintained from the first *series* dispenser back to the tank.

When utilizing single walled product pipe regardless of utilizing sumps, the pipe slope requirement applies *throughout* the piping run. When utilizing double walled product piping and *not* utilizing sumps, the pipe slope requirements shall also be maintained throughout the piping run.

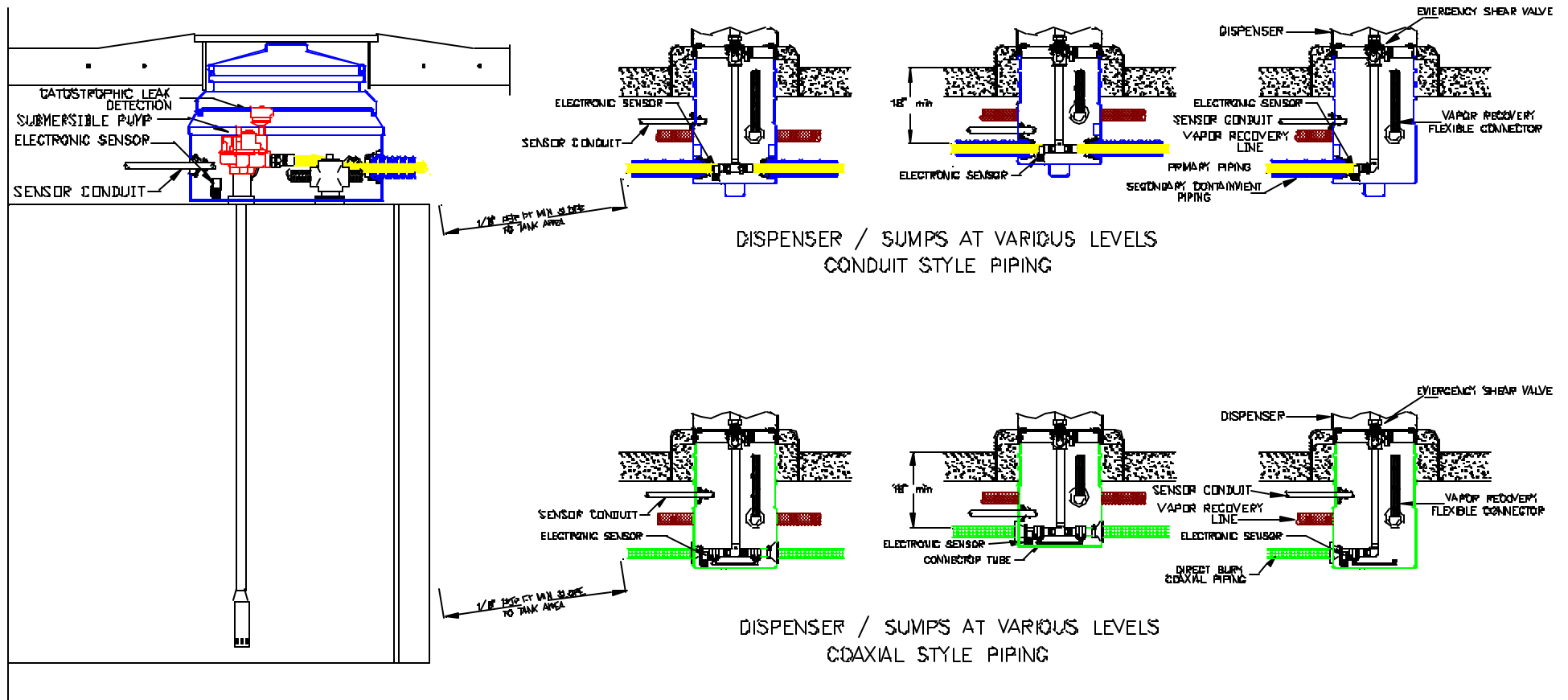
**Special note:** Prior to the revision of PEI/RP 100 the Department approved several piping systems which may not conform to the criteria presented in this program letter. The subject systems were approved on site specific considerations and concepts. The subject systems have been authorized via previous plan review or revision and are not required to conform to the new criteria.

Revised March, 1998



The diagrams and language reflect the unique installation conditions possible with the use of secondarily contained underground flexible piping systems.

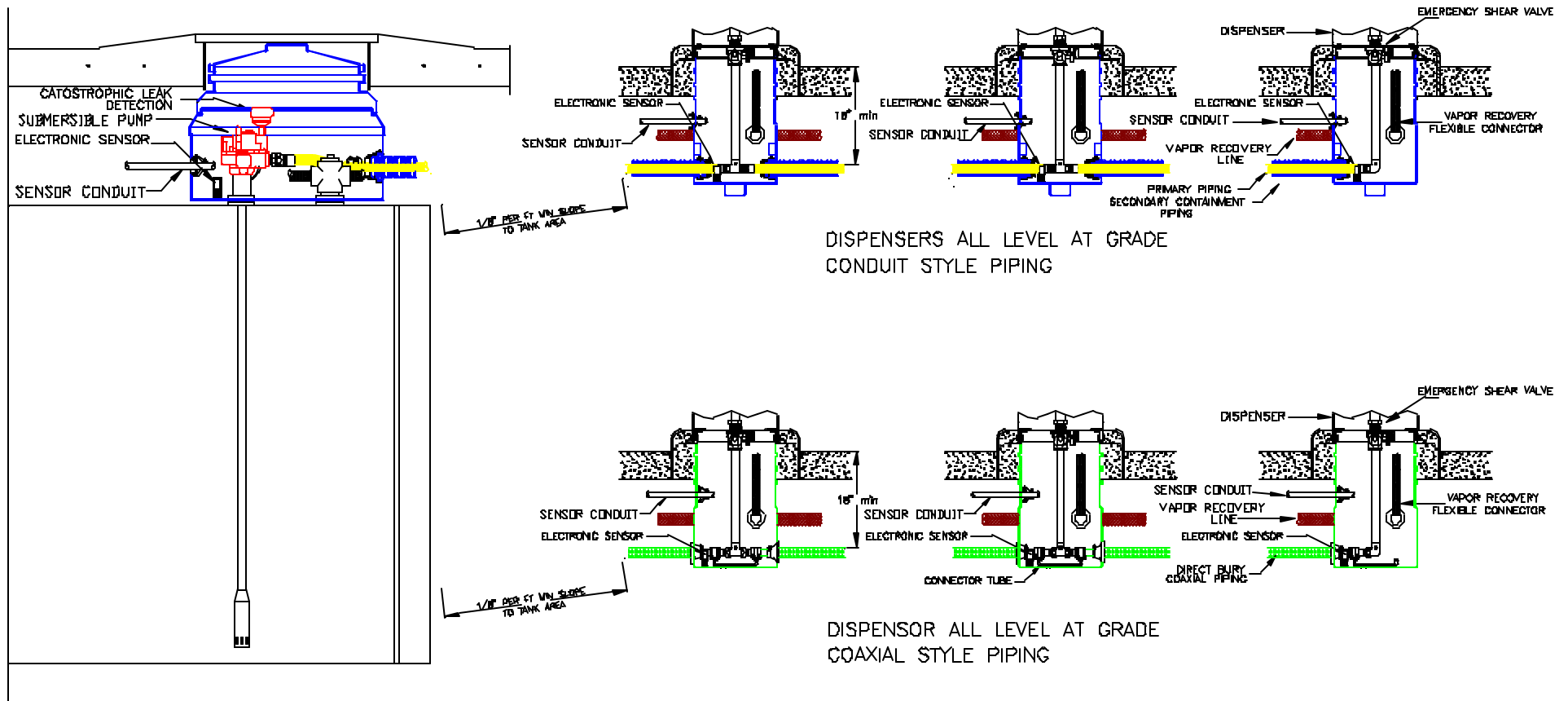
(Note: Rigid product piping systems shall maintain a minimum 1/8 inch per foot slope from the furthest dispenser back to the tank area.)



\* The requirements for proper pipe trenches, backfilling, compaction and paving shall be maintained.

The diagrams and language reflect the unique installation conditions possible with the use of secondarily contained underground flexible piping systems.

(Note: Rigid product piping systems shall maintain a minimum 1/8 inch per foot slope from the furthest dispenser back to the tank area.)



\* The requirements for proper pipe trenches, backfilling, compaction and paving shall be maintained.